

Signed 8/16/96

4WD-RCRA

SUBJ: Evaluation of Monsanto's (now known as Solutia) status
under the RCRIS Corrective Action Environmental
Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: FLD 071 951 966

FROM: Wesley S. Hardegree
GA/FL Unit

THRU: Kent Williams
Acting Section Chief
RCRA Permitting Section

TO: G. Alan Farmer
Chief, RCRA Branch

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Monsanto's status in relation to the following RCRIS corrective action codes:

- 1) Human Exposures Controlled Determination (CA725),
- 2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the RCRA Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

- 1) YE Yes, applicable as of this date.

- 2) NA Previous determination no longer applicable as of this date.
- 3) NC No control measures necessary.

Region 4 has also added a regional status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. Similarly, the regional status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the first evaluation performed by EPA for Monsanto. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for Monsanto.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents: April 26, 1996, Final RCRA Facility Investigation (RFI) Work Plan; January 8, 1996, Draft Confirmatory Sampling Report.

III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

FACILITY HISTORY

The Monsanto Company Pensacola Plant is located in Escambia County, Florida. The operating portion of the facility occupies approximately 200 acres of the 2,200 acres owned by Monsanto. The property is bordered by the Escambia River on the east. Residential areas are found to the west of the facility. An approximate one-half mile buffer consisting of grass and pine

trees separates the manufacturing portion of the facility from the residential areas. Champion International Forest Lands operates to the north of Monsanto, and Gulf Power Steam Plant (Crist Plant) is located to the south.

The Monsanto facility produces synthetic fiber products including carpet fibers, modeling resins and chemical intermediates. Manufacturing operations utilize cyclohexane, natural gas, ammonia and adiponitrile to synthesize hexamethylene diamine and adipic acid, which are two major components of nylon 6,6. Guest manufacturing facilities on-site produce medical gases, elastomers, maleic anhydride and nylon.

Wastes generated by the facility include: production wastewaters, stormwater runoff, assorted hazardous wastes, non-hazardous solid wastes, domestic wastewater, waste oil and off-specification production wastes. The facility uses several methods of waste disposal. These include, or have included in the past, deep well injection, recycling, offsite disposal, landfilling, biologic treatment and land application.

GROUNDWATER

Releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels. There are two general areas of groundwater contamination:

- 1) The volatile organic plume associated with the RCRA Regulated Unit and SWMU 24 - Area E (Plume 1).
- 2) The trichloroethylene (TCE) spill AOC located near two SWMUs, Area A and Area B (Plume 2).

Plume 1

Although Plume 1 is approximately 3/4 of a mile long and approximately 750 feet wide, it is contained within the property of Monsanto (see Attached Figure B-26). The plume is traveling northeast toward the Escambia River and its associated riverine wetlands. Groundwater velocity has been measured at approximately 5 to 20 feet per year. The contaminants appear to be contained within the upper and lower portions of Surficial Zone of the Sand and Gravel Aquifer (i.e., the first 100 feet below land surface); however, deeper wells are planned to fully characterize the vertical extent of contamination.

Approximately twenty-one (21) volatile organics have been detected in the groundwater. The most frequently detected volatile is 1,1-dichloroethene (1,1-DCE). Plumes of benzene, trichloroethylene and vinyl chloride generally occur within the areal extent of the 1,1-DCE plume. The highest concentration of 1,1-DCE exceeds 100 ppb. The maximum contaminant limit (MCL) for

1,1-DCE is 7 ppb. The source of this volatile plume appears to be a small waste disposal area of seven lab packed drums and various smaller laboratory containers. These drums were excavated in 1988. The Florida Department of Environmental Protection (FDEP) also believes that the RCRA Regulated Unit contributed to the volatile plume. The RCRA Regulated Unit is currently undergoing physical closure.

A boron plume also exists concurrently with a portion of the volatile organic plume (see Attached Figure B-31). The source of this contaminant is different from that of the volatile plume. The source of boron contamination appears to be from Areas F and G, two past landfills. Higher concentrations of the boron plume appear in the lower portion of the Surficial Zone. The maximum boron concentration reported is 230,000 ppb. The Region 3 risk-based number for human consumption of boron in water is 3,300 ppb.

Plume 2

Plume 2 consists mainly of trichloroethylene (TCE) and associated breakdown products. Plume 2 was discovered through routine monitoring of PW-8, an onsite process water supply well screened in the Main Producing Zone of the Sand and Gravel Aquifer. Apparently, over a period of years, TCE solvent was used to clean nylon thread spool. A large equipment wash area that used TCE and other solvents contributed to the groundwater contamination. The characterization of Plume 2 is just beginning; therefore little information on extent or maximum concentration is available. However, past monitoring of PW-8 showed concentrations of TCE ranging between 6 ppb and 32 ppb. The MCL for TCE is 5 ppb.

Although at least two distinct groundwater plumes exist at Monsanto, the groundwater contamination is presently within the borders of Monsanto and there are no onsite drinking water wells used by Monsanto.

Based on the above discussion, current human exposures to the onsite groundwater contamination are controlled because there are no drinking water wells within the facility which could extract the contaminated groundwater.

SURFACE WATER

Surface water associated with the facility is currently not known to be contaminated. If, during the RFI, information becomes available which disputes this thought, then this statement will have to be revised. Furthermore, even if the groundwater plumes, which are migrating toward the Escambia River, reach the Escambia River, the major use of surface water is for industrial processes and thermoelectric cooling water. No

drinking water is supplied from surface water sources in Escambia or Santa Rosa Counties. Because there is no known surface water contamination at this time, **there are no controls necessary to prevent human exposures.**

SOIL

Soil at the facility is contaminated with constituent concentrations above relevant action levels. Monsanto has many SWMUs which are former surface impoundments or landfills. Many of these SWMUs are no longer in use and have been closed. The closure of these surface impoundments and landfills generally consisted of backfilling with clean sands and clays taken from an on-site borrow pit. Some of the SWMUs underwent waste removal prior to the backfilling operation. Some of the types of wastes handled by these SWMUs included general plant wastes, waste from the nylon production area, nylon intermediate residues, construction debris, trash, adipic tars and nitrile synthesis catalysts, titanium oxide pigment, monobasic and dibasic acids, alcohols, amines, ketones, mineral acids, esters, drummed solvents and plastic. Some of these past units are now covered by buildings.

Although not all of the SWMUs and AOCs have undergone sampling, recent Confirmatory Sampling (late 1995) at some of the SWMUs and AOCs has indicated hazardous constituents in soil (e.g., xylene, PCB, toluene, MEK, barium, chromium, lead, zinc, mercury, nickel, vanadium, copper). Comparison of the concentrations of the above constituents to background suggest that a release has occurred at many of the units or that contaminants exist within the units. However, EPA's preliminary decision is that the known concentrations do not warrant concern for human exposures at this time. This opinion is based on the fact that the detected concentrations are protective of an industrial setting (see Region 3 risk based tables for industrial setting) along with the fact that the types of units are industrial units which do not lend themselves to intimate contact. Furthermore, many of the industrial units which have been closed by backfilling with clean soil thereby eliminating incidental human exposure to contaminants.

In summary, there is soil contamination or wastes left in place at the facility, but EPA believes that current access controls contain human exposures to acceptable levels. For example, Monsanto maintains security measures to prevent unknowing/unauthorized entry of persons onto the manufacturing portions of the facility. Many of the units which contain wastes are in areas of the plant which are not heavily traveled by employees involved in the manufacturing operations at Monsanto. Furthermore, many of the units have been backfilled or had buildings constructed over them which makes incidental exposure

to underlying wastes unlikely.

Based on the above discussion, human exposures to contaminated soil are currently controlled. However, the SWMU/AOC characterization is currently underway and further information may become available which could force a revision to this position.

AIR

Releases to air from contaminated soil or groundwater contaminated by SWMUs and/or AOCs at the facility is not known to be occurring at concentrations above relevant action levels or not expected to be occurring above relevant action levels. **Therefore, there is no human exposure to contamination via an air route.**

IV. STATUS CODE RECOMMENDATION FOR CA725:

As discussed in Section III, human exposures to all contaminated environmental media of concern at Monsanto are controlled through access controls or institutional-type controls (e.g., the industrial nature of the facility, location and condition of the contaminated SWMUs or AOCs). Therefore, it is recommended that CA725 YE be entered into RCRIS.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA750:

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this date.
- 3) NR No releases to groundwater.

Region 4 has also added an additional status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively (i.e., natural attenuation) controlling the physical movement of

groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured. Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first formal evaluation performed for Monsanto. Please note that CA750 is based on the adequate control of **all** contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents: April 26, 1996, Final RFI Work Plan; January 8, 1996, Draft Confirmatory Sampling Report.

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section V and summarized in the groundwater portion of Section III, releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels in two main onsite plumes, Plume 1 and Plume 2. Although an air sparging pilot test for Plume 1 has been performed under the direction of FDEP, the final system has yet to be fully installed. With regard to Plume 2, not enough information is available to successfully impose Interim Measures at this time. Once Phase I results are available from the RFI process, EPA will make a decision on whether or not Interim Measures should be imposed.

Because all groundwater contamination at the facility is not controlled and this is the first evaluation at this facility, it is recommended that CA750 NO be entered into RCRIS.